

Armrest Assembly

Field of Invention

The present invention relates to an armrest assembly.

Background of Invention

Referring to Figures 11 and 12, a conventional armrest assembly includes a first tube 100, a second tube 200 telescopically inserted in the first tube 100, an X-shaped lock 220 for locking the second tube 200 in position relative to the first tube 100 and an armrest 300 installed on the second tube 200. The first tube 100 includes a base 110 to be secured to a chair (not shown) and many pairs of apertures 160. The second tube 200 includes two upper apertures 211, two lower apertures 212, two opposite apertures 260 and a platform 290 for supporting the armrest 300. The X-shaped lock 220 includes two members 225 each including an aperture 223, an upper tip 221 and a lower tip 222. A spring 240 is compressed between the members 225 near the upper tips 221. Another spring 240 is compressed between the members 225 near the lower tips 222. The X-shaped lock 220 is put in the second tube 200. A pin 270 is inserted into the apertures 223 through the apertures 260 so as to keep the X-shaped lock 220 in the second tube 200. The upper tips 221 are inserted through the upper apertures 211. A button 280 is attached to the upper tip 221 of each member 225. The lower tips 222 can be inserted into one of the pairs of apertures 160 through the lower apertures 211 so as to lock the second tube 200 in position relative to the first tube 100. Via pressing the buttons 280, the upper tips 221 are retreated into the

1 upper apertures 211, i.e., the lower tips 222 are retreated into the lower
2 apertures 212 from the apertures 160 so as to the allow movement of the
3 second tube 200 relative to the first tube 100. It is however difficult to
4 simultaneously push the buttons 280 since they are located under the
5 armrest 300 and on two opposite sides of the second tube 200.
6 Moreover, the springs 240 eventually become inadequate to keep the
7 lower tips 222 in the apertures 160. If this happens, the lower tips 222
8 can easily be jerked from the apertures 160 and worn against the second
9 tube 200 without previously pushing the buttons 280 when the armrest
10 300 is lifted unintentionally.

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12 The present invention is therefore intended to obviate or at least alleviate
13 the problems encountered in prior art.

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15 **Summary of Invention**

16 It is an objective of the present invention to provide a convenient armrest
17 assembly.

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19 It is another objective of the present invention to provide a robust armrest
20 assembly.

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22 It is another objective of the present invention to provide a reliable
23 armrest assembly.

24

25 According to the present invention, an armrest assembly is disclosed.

26 The armrest assembly includes a stationary tube for attachment to a chair.

1 The stationary tube includes recesses in an internal face. A movable
2 tube is inserted in the stationary tube. The movable tube includes an
3 aperture. An armrest is installed on the movable tube. A detent can be
4 inserted into one of the recesses of the stationary tube through the
5 aperture of the movable tube. A rod is inserted in the movable tube.
6 The rod defines a recess for receiving the detent. The recess of the rod
7 includes a shallow portion and a deep portion. A lever is connected with
8 the rod and installed on the armrest in order to move the rod so as to
9 control the detent.

10

11 Other objects, advantages and novel features of the invention will become
12 more apparent from the following detailed description in conjunction
13 with the attached drawings.

14

15 **Brief Description of Drawings**

16 The present invention will be described via detailed illustration of
17 embodiments referring to the drawings.

18

19 Figure 1 is a perspective view of a chair equipped with two armrest
20 assemblies according to a first embodiment of the present invention.

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22 Figure 2 is a perspective view of one of the armrest assemblies shown in
23 Figure 1.

24

25 Figure 3 is an exploded view of the armrest shown in Figure 2.

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1 Figure 4 is a cross-sectional view of the armrest shown in Figure 2.

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3 Figure 5 is a cross-sectional view of the armrest taken along a line 5-5 in

4 Figure 4.

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6 Figure 6 is similar to Figure 4 but shows the armrest in another position.

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8 Figure 7 is a cross-sectional view of the armrest taken along a line 7-7 in

9 Figure 6.

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11 Figure 8 is similar to Figure 7 but shows the armrest in another position.

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13 Figure 9 is a cross-sectional view of an armrest according to a second
14 embodiment of the present invention.

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16 Figure 10 is similar to Figure 9 but shows the armrest in another position.

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18 Figure 11 is an exploded view of a conventional armrest.

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20 Figure 12 is a cross-sectional view of the armrest shown in Figure 11.

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22 **Detailed Description of Embodiments**

23 Figure 1 shows a chair 1 equipped with two armrest assemblies according
24 to a first embodiment of the present invention. Figure 2 shows only one
25 of the armrest assemblies shown in Figure 1.

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1 Referring to Figures 2 and 3, the armrest assembly includes a first tube 10,
2 a second tube 20 securely inserted in the first tube 10, a third tube 30
3 telescopically inserted in the second tube 20, an armrest 50 secured to the
4 third tube 30 and a control device 60 for locking the third tube 30 in
5 position relative to the second tube 20. A pad 2 is attached to the top of
6 the armrest 50. A sleeve 40 is secured to the bottom of the armrest 50 in
7 order to cover the third tube 30.

8

9 The second tube 20 consists of two halves 21 each including a flange 22
10 formed thereon and many recesses 23 defined therein. The recesses 23
11 of the halves 21 make many pairs of recesses 23. Although made as two
12 separate pieces in the first embodiment, the halves 21 may be merged in
13 other embodiments. The halves 21 are secured in the first tube 10 with
14 the flanges 22 resting on an upper edge of the first tube 10. Each of the
15 halves 21 is secured to the first tube 10 by means of a pin (not shown) for
16 example.

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18 The third tube 30 includes a platform 32 formed thereon and two opposite
19 apertures 33 of which only one is shown in Figure 3. The third tube 30
20 is telescopically inserted in the second tube 20.

21

22 The armrest 50 includes two bearings 52 formed thereon, a first aperture
23 51 defined therein and a second aperture 53 defined therein. The
24 armrest 50 is secured to the platform 32 by means of two screws (not
25 numbered) for example.

26

1 The control device 60 includes two detents 63 for insertion into a pair of
2 recesses 23 through the apertures 33, a rod 62 movably inserted in the
3 third tube 30 for controlling the detents 63 and a lever 61 installed on the
4 armrest 50 for controlling the rod 62.

5
6 The lever 61 is formed with a shaft 42. Moreover, the lever 61 includes
7 an aperture 44 defined therein, two recesses 46 defined therein and a
8 button 48 formed on the bottom thereof. The shaft 42 is installed on the
9 bearings 52. The aperture 44 is aligned with the second aperture 53 of
10 the armrest 50. The button 48 is inserted through the first aperture 51 of
11 the armrest 50.

12
13 The detents 63 are both in the form of a ball.

14
15 The rod 62 includes an ear 54 formed thereon and two opposite recesses
16 56 defined therein in order to receive the detents 63. Each recess 56
17 includes a shallow portion and a deep portion. A pin 58 is driven into
18 the rod 62, exposing two ends. The rod 62 is inserted in the third tube
19 30 through the aperture 44 of the lever 61 and the second aperture 53 of
20 the armrest 50. Two ends of the pin 58 are put in the recesses 46. A
21 plug 31 is fit in a lower end of the third tube 30. The plug 31 is formed
22 with a rod 34. A tensile spring 58 includes a lower end hooking the rod
23 34 formed on the plug 31 and an upper end hooking the ear 54 formed on
24 the rod 62.

25
26 Referring to Figures 4 and 5, the button 48 is exposed through the first

1 aperture 51 of the armrest 50. The rod 62 is kept in a normal position by
2 means of the spring 64. The detents 63 are put in the shallow portions
3 of the recesses 56. On the other hand, the detents 63 are put in a related
4 pair of recesses 23. Hence, the third tube 30 is locked in position
5 relative to the second tube 20.

6

7 Referring to Figures 6 and 7, the button 48 is pressed into the first
8 aperture 51 of the armrest 50, i.e., the lever 61 is pivoted upwards. The
9 rod 62 is pulled upwards by means of the lever 61. The detents 63 are
10 put in the deep portions of the recesses 56. On the other hand, the
11 detents 63 are removed from the recesses 23. Hence, the third tube 30
12 can be moved relative to the second tube 20. The armrest 50 and the
13 sleeve are movable together with the third tube 30.

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15 Referring to Figure 8, when the third tube 30 is moved to a desired
16 position, the button 48 is released. The rod 62 is returned to the normal
17 position by means of the spring 64. As mentioned above, the detents 63
18 are put in the shallow portions of the recesses 56 on one hand and in a
19 related pair of recesses 23 on the other hand. Hence, the third tube 30 is
20 again locked in position relative to the second tube 20.

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22 Figures 9 and 10 show an armrest assembly according to a second
23 embodiment of the present invention. The second embodiment is
24 identical to the first embodiment except for three things. Firstly, the
25 armrest 50 and the sleeve 40 are made as one piece. Secondly, a tubular
26 stop 24 is fit in the second tube 20. Finally, the third tube 30 includes an

1 annular flange 34 for abutment against the stop 24 so as to keep the third
2 tube 30 telescopically inserted in the second tube 20.

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4 The present invention has been described via detailed illustration of the
5 embodiments. Those skilled in the art can derive variations from the
6 embodiments without departing from the scope of the present invention.

7 Therefore, the embodiments shall not limit the scope of the present
8 invention defined in the claims.

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